Title (en)

ELECTROLYTIC PEROVSKITES

Title (de)

ELEKROLYTISCHE PEROWSKITE

Title (fr)

PEROVSKITES ELECTROLYTIQUES

Publication

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Application

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Priority

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Abstract (en)

[origin: US2004062968A1] An electrolytic perovskite and method for synthesizing the electrolytic perovskite are described herein. Basically, the electrolytic perovskite is a solid that has an ion conductivity greater than 10<-5 >S/cm in a temperature range of 0-400° C., wherein the ion is Li<+>, H<+>, Cu<+>, Ag<+>, Na<+> or Mg<2+>. For example, Li1/8Na3/8La1/4Zr1/4Nb3/4O3 (5.26x10<-4 >S/cm) and Li1/8K1/2La1/8NbO3 (2.86x10<-3 >S/cm) are two electrolytic perovskites that have been synthesized in accordance with the present invention that have a high Li<+> conductivity at 20° C. Both compositions have been confirmed in experiments to conduct Ag<+> and H<+> ions, as well. The present invention also includes a solid proton conductor that can be formed from the electrolytic perovskite by replacing the ions located therein with protons. The electrolytic perovskite and solid proton conductor can be used in a wide variety of applications or devices including, for example, a fuel cell, a membrane reactor, an amperometric hydrocarbon sensor or a steam electrolysis application.

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